

**REMARKS**

In the present Amendment, claim 19 has been amended to correct a typographical error, correcting word “palate” in line 5 to “plate” and to add a final step “and thereby forming the ink-jet recording head.” Claim 21 has been amended to also add a final step “and thereby forming the ink-jet recording head.” No new matter has been added.

Entry of the Amendment “after final” is submitted to be proper, since Applicants are merely improving the grammar and form of the claims and no questions of further search or consideration should be raised.

Upon entry of the Amendment, which is respectfully requested, claims 19-22 will be pending.

In Paragraph No. 1 of the Action, claim 19 is objected to because “vibration palate” should have been “vibration plate”. As noted above, these informalities have been corrected. Accordingly, the objection should be overcome.

In Paragraph No. 2 of the Action, claims 19 and 21 are rejected to because adding a phrase “and thereby forming the ink-jet recording head” should have finished the last step of “joining a nozzle plate, having nozzle orifices, to the passage-forming substrate”. As noted above, claims 19 and 21 have been amended to add the step. Accordingly, this objection should be overcome.

**Claim Rejection - 35 U.S.C. § 102(b) - Claim 19**

In Paragraph 9 of the Action, claim 19 is rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Shimada et al (EP 963 846).

Applicants submit that this rejection should be withdrawn because Shimada et al. does not disclose or render obvious the manufacturing method for an ink-jet recording head of the present invention.

Applicants submit that the present invention is different from the disclosure of Shimada et al. '846 in that the method of the present invention includes the "step of imparting etching selectivity".

The Examiner has stated that the structure including the elastic film and the elastic film removal part formed therein, as shown in figure 12 of Shimada et al., clearly shows the etching selectivity imparted to the elastic film. This elastic film removal part, however, can be easily formed by controlling the etching time of the elastic film, and also, Shimada et al. provides no disclosure suggesting the step of imparting the etching selectivity to the elastic film. There is no clear support that the structure, including the elastic film and the elastic film removal part formed therein, as shown in figure 12 of Shimada et al., shows that the etching selectivity is imparted to the elastic film.

Additionally, in the present invention where the etching selectivity is imparted to the passage-forming layer in order to form a space, the width of the space is substantially uniform in the thickness direction of the passage-forming layer. As apparent from Figure 12 of Shimada et al., the width of the elastic film removal part 350, however, is greater when it gets closer to the passage-forming substrate 10. This evidences clear support that the elastic film removal part 350 of Shimada et al. must be formed by controlling the etching time for etching the elastic film 50 from the pressure generating chamber side (see pressure generating chamber 12).

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Accordingly, the manufacturing method of the present invention is different from the manufacturing method disclosed in Shimada et al., and is not obvious from the disclosure of Shimada et al.

Mr. Shimada, the inventor of the present invention, is also the inventor of Shimada et al. Mr. Shimada is submitting a 132 declaration presenting the content of the above comment.

In view of the above, reconsideration and withdrawal of the § 102(b) rejection based on Shimada et al '846 is respectfully requested.

**Claim Rejections - 35 U.S.C. § 103(a)**

In Paragraph No. 12 of the Action, claims 20-22 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shimada et al (EP 963 846).

Applicants respectfully traverse this rejection because Shimada et al fails to teach or suggest all the elements as set forth in the claims.

Claims 20-22 set forth that etching selectivity is imparted by doping boron onto a predetermined region of a passage-forming layer which is formed of a polysilicon layer. As noted above in connection with claim 19, Shimada et al fails to teach or suggest etching a passage-forming layer to form a space portion of the passage-forming layer after there is imparted etching selectivity to a region that will be a space portion of the passage-forming layer. Accordingly, Shimada et al fails to disclose imparting etching selectivity by doping boron, as set forth in claims 20-22.

The Examiner asserts that it would have been an obvious design choice to use polysilicon or boron-doped polysilicon as the passage-forming layer so as easily to generate pressure in order to eject ink. However, the Examiner provides no evidence, or cogent line of reasoning, as

to why the choice of polysilicon or boron-doped polysilicon would provide such advantages, nor how they would be used to do so.

Yet, even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. *In re Kotzab*, 55 USPQ2d at 1316-1317 (citing *B.F. Goodrich Co. v. Aircraft Breaking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996)); see also MPEP § 2142 (quoting *Ex parte Clapp*, 227 USPQ 972, 973 (B. Pat. App. & Inter. 1985)) (“To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.”).

Although a reference need not expressly teach that the disclosure contained therein should be modified, the showing of why one of ordinary skill would have made such a modification, in whatever form, must nevertheless be “clear and particular”. *Winner International Royalty Corporation v. Ching-Rong Wang*, 53 USPQ2d 1580, 1586-87 (Fed. Cir. 2000) (citations omitted).

Here, it is Applicants, not Shimada et al., who are concerned with the etching properties of the passage-forming layer. Further, as noted above, it is Applicants who have disclosed the advantages of high accuracy and ease in manufacture coming from etching the passage-forming layer after etching selectivity has been imparted thereto. Again, see page 8, line 6 - page 9, line 12. Thus, because Shimada et al. is not at all concerned with the specifics of the general “etching” process, one of ordinary skill in the art—following the teachings of Shimada—would

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not have found it obvious to use the specific etching processes, i.e., providing etching selectivity to the passage forming layer, as claimed.

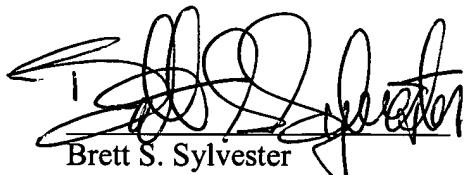
For at least any of the above reasons, Shimada fails to render obvious Applicants' claims 20-22. Reconsideration and withdrawal of the § 103(a) rejection based on Shimada et al. '846 are respectfully requested.

**Conclusion**

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: June 1, 2006